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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,869	07/09/2003	Sandeep Gulati	VIALO-24	1459
20985	7590	06/23/2006	EXAMINER	
FISH & RICHARDSON, PC P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022			NEGIN, RUSSELL SCOTT	
			ART UNIT	PAPER NUMBER
			1631	

DATE MAILED: 06/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/616,869	Applicant(s) GULATI, SANDEEP	
	Examiner Russell S. Negin	Art Unit 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-63 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Notes

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 5-64 been renumbered 4-63.

It is noted that there is no claim number 4 in the instant set of claims.

This action will reflect the corrected set of claims.

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-18, drawn to a system for performing active interferometric analysis, classified in class 702, subclass 19. If this group is chosen, then the below mentioned species elections are also required.
- II. Claims 19-27, drawn to a system for performing active interferometric analysis using reverberant convergence to detect resonance events, classified in class 702, subclass 19. If this group is chosen, then the below mentioned species elections are also required.

- III. Claims 28-34, drawn to a method for actively analyzing signal pattern representative of arrayed data, classified in class 702, subclass 19. If this group is chosen, then the below mentioned species elections are also required.
- IV. Claim 35, drawn to a system of analyzing a signal pattern to identify events of interest, classified in class 702, subclass 19.
- V. Claims 36-45, drawn to a system for analyzing a signal pattern to identify events of interest within the signal pattern involving convolutions and preconditioning, classified in class 702, subclass 19.
- VI. Claims 46-49, drawn to a system for analyzing an arrayed signal pattern generated by an arrayed platform device to identify events of interest within the signal pattern involving convolutions while using spherical harmonics, classified in class 702, subclass 19.
- VII. Claims 50-54, drawn to a system for analyzing a signal pattern to identify events of interest within the signal pattern using canonical expessor functions, classified in class 702, subclass 19.
- VIII. Claims 55-61, drawn to another system for analyzing a signal pattern to identify events of interest within the signal pattern involving an iterative interferometric coupler, classified in class 702, subclass 19.
- IX. Claims 62-63, drawn to a computer code product for actively analyzing a signal pattern representative of arrayed data to identify events of interest, classified in class 702, subclass 19.

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The inventions are distinct, each from the other because of the following reasons:

Inventions I through IX are directed to related processes and apparatus. The related inventions are distinct if the inventions as claimed do not overlap in scope, i.e., are mutually exclusive; the inventions as claimed are not obvious variants; and the inventions as claimed are either not capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP § 806.05(j).

Invention I is a distinct system used for performing interferometric analysis without the system requirements of Groups II through IX. Invention II, like Invention I is a system for performing active interferometric analysis, but uses reverberant convergence to detect resonance events. While Invention III has the features of inputting, generating, and detecting, Invention IV has the distinct requirements of a preconditioner unit, an active interferometric coupler, and a resonant marker detector. While Invention V also has the requirements of a preconditioner unit, a coupler unit and a resonant marker detector, it also involves the distinct features of convolving the signal patterns and using spherical harmonics to parameterize events. Invention VI is unique and distinct from the other inventions because it performs the convolving of signal patterns step while performing the spherical harmonics parameterization step. Invention VII is unique and distinct because it performs the analysis step using canonical expessor functions. Invention VIII is unique because it utilizes an interferometric coupler that is iterative. Invention IX is unique and distinct because it employs a computer code product to a process which can theoretically be completed by

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hand. Because of the different steps required to perform each of the above mentioned inventions, there is undue search burden in examining all possible inventions.

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Species Elections for Group I:

If Group I is selected, then the below set of species elections are required. There are seven species elections, from which the applicant must choose one from each category.

Category #1: Array data type (claim 5)

Applicant must select a form of the arrayed data listed in claim 5.

Justification: Each form of the arrayed data is in a statistically distinct form.

Category #2: Platform type (claim 6)

Applicant must select a platform type from those listed in claim 6.

Justification: Each type of platform is physically distinct with its own set of physical properties.

Category #3: arrayed data generation device (claim 7)

Applicant must elect if the arrayed data is generated from a device chosen from the group listed in claim 7.

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Justification: Each type of device listed is physically distinct from the other devices listed

Category #4: expressor function (claim 10)

Applicant must elect an expressor function comprised of either frequency domain sequences, time domain sequences, spectral sequences, phase sequences, or numeric sequences.

Justification: Each type of expressor function is distinct mathematically involving a different type of search.

Category #5: interferometric analysis (claims 13 and 14)

Applicant must elect whether the interferometric analysis includes constructive or destructive interferometric analysis.

Justification: Constructive and destructive interferometric analyses are mathematically and physically distinct.

Category #6: wave interactions (claims 15 and 16)

Applicant must elect whether active interferometric analysis includes wave-particle or wave-wave interactions.

Justification: Wave-particle and wave-wave interactions are mathematically and physically distinct.

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Category #7: domain analysis (claim 17)

Applicant must elect whether active interferometric analysis includes a frequency domain, time domain or phase domain analysis.

Justification: Each type of analysis is mathematically and physically distinct.

Species Elections for Group II:

If Group II is selected, then the below set of species elections are required. There are four species elections, from which the applicant must choose one from each category.

Category #1: system of analysis (claim 21)

Applicant must elect whether the quantum interferometric analysis is applied to a static spatial system, a static data from arrayed measurement platforms, dynamical systems, spatio-temporal systems and plasma systems.

Justification: Each type of system is physically unique with its own set of properties.

Category #2: noise (claim 23)

Applicant must elect whether the interferometric analysis exploits non-Gaussian noise, ergodic noise, or quantum mechanical noise.

Justification: Each type of noise is statistically distinct with its own set of mathematical and physical properties.

Category #3: coherence (claim 25)

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Applicant must elect whether active interferometric signal analysis exploits coherent, incoherent, synchronized, or asynchronous oscillation.

Justification: Each type of oscillation is mathematically and physically distinct with its own set of properties.

Category #4: domain convolution operations (claim 26)

Applicant must elect whether the active interferometric analysis exploits time or frequency domain convolution operations.

Justification: Each type of convolution operation is mathematically distinct.

Species Elections for Group III:

If Group III is selected, then the below set of species elections are required. There are five species elections, from which the applicant must choose one from each category.

Category #1: Synthetic Noise (claim 29)

Applicant must choose from claim 29 whether the synthetic noise is in the form of a quantum expressor function, a classical expressor function, classical statistical noise, pseudorandom noise, or a systemic bias.

Justification: Each form of noise is mathematically and physically distinct from the other sets of noises.

Category #2: Array data type (claim 30)

Applicant must select a form of the arrayed data listed in claim 30.

Justification: Each form of the arrayed data is in a statistically distinct form.

Category #3: preconditioning the signal pattern (claim 32)

Applicant must select a preconditioning function listed in claim 32.

Justification: Each preconditioning function is mathematically unique from the other functions.

Category #4: Platform type (claim 33)

Applicant must select a platform type from those listed in claim 33.

Justification: Each type of platform is physically distinct with its own set of physical properties.

Category #5: arrayed data generation device (claim 34)

Applicant must elect if the arrayed data is generated from a device chosen from the group listed in claim 34.

Justification: Each type of device listed is physically distinct from the other devices listed

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Searching all of the above possibilities would result in undue burden because of the divergent subject areas.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Generic claims to Group I are: 1-12, 17-18. Generic claims to Group II are: 19-27. Generic claims to Group III are: 28-34.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the

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requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, Ph.D., whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Andrew Wang, Supervisory Patent Examiner, can be reached at (571) 272-0811.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Tina Plunkett, whose telephone number is (571) 272-0549.

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Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

-RSN 6/16/2006

Rm 16 June 2006

John S. Brusca 16 June 2006
JOHN S. BRUSCA, PH.D.
PRIMARY EXAMINER